



Tubos de Acero de México, S.A.
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CERTIFICADO DE CALIDAD INSPECTION CERTIFICATE (DIN EN 10204:2004E - ISO 10474 3.1.B)	Numero: Number: 24683	Pagina/Page: 1
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Vendido a: PROVEEDORA DE MATERIALES ANGER, S.A. Sold to: DE C.V.	Pedido del Cliente No: 5960 - 5996 - 6023 - Customers Order No:	Lista de Empaque: 12731 Packing List:	Fecha/Date: 23 de Junio de 2011
Especificaciones y Grados / Standard or Specification and Steel Grade Seamless Fittings according to ASTM A 234 WPB-07, NACE MR 01.75-2003 Conform to ASME II Ed. 2001 ASME SA-234, Grade WPB, NACE MR0103-2003	Dimensiones y tolerancias / Dimension and tolerances ASME B 16.9 - 2007 and ASME B 16.28 - 1994		Factura/Invoice: Bocas / Ends Biselado / Beveled ends

DESCRIPCION DE MATERIAL / MATERIAL DESCRIPTION				PRUEBAS MECANICAS / MECHANICAL TEST				PRUEBA DE IMPACTO 0°C / IMPACT TEST 0°C				
ART. ITEM	COLADA HEAT CODE	CANTIDAD QUANTITY	DESCRIPCION / DESCRIPTION	ESF. CEDENCIA YIELD STRENGTH (Mpa)	ESF. RUPTURA TENSILE STRENGTH (Mpa)	ELONG. %2"	DUREZA HARDNESS HBW	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules
1	T50768	18	CODO 16 X 90° R.L. CED-XS	315	480	44	122					
2	T50879	50	CODO 8 X 90° R.L. CED-XS	295	482	44	91					
3	T54400	200	CODO 8 X 45° CER-STD	296	468	42	118					
4	T51309	18	CODO 12 X 90° R.L. CED-XS	310	483	45	122					
5	T50961	36	CODO 12 X 90° R.L. CED-XS	303	482	45	120					
6	T52004	7	CODO 14 X 90° R.L. CED-40	323	481	32	100					
7	T51312	3	CODO 14 X 90° R.L. CED-40	298	486	44	118					

ANALISIS QUIMICO / CHEMICAL ANALYSIS														
PROCESO PROCESS	COLADA HEAT CODE	COLADA/HEAT M.P./MOTHER PIPE	%C.E.	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	T50768	50768	0.310	0.180	0.660	0.012	0.001	0.280	0.050	0.044	0.018	0.020	0.000	0.000
HF	T50879	50879	0.310	0.180	0.660	0.014	0.002	0.290	0.040	0.049	0.014	0.030	0.000	0.000
HF	T54400	54400	0.290	0.170	0.650	0.008	0.003	0.270	0.040	0.045	0.014	0.030	0.000	0.000
HF	T51309	51309	0.300	0.170	0.660	0.012	0.001	0.280	0.050	0.051	0.017	0.030	0.000	0.000
HF	T50961	50961	0.310	0.180	0.670	0.011	0.003	0.278	0.030	0.056	0.028	0.040	0.000	0.000
HF	T52004	52004	0.320	0.180	0.680	0.015	0.002	0.290	0.060	0.054	0.024	0.040	0.000	0.000
HF	T51312	51312	0.310	0.180	0.660	0.012	0.001	0.270	0.040	0.062	0.027	0.040	0.000	0.000

Certificamos que los resultados de los Análisis Químicos y Pruebas Mecánicas son verdaderos o una copia fiel de los certificados enviados por el Fabricante y/o el proveedor de Materia Prima (Tubería Sin Costura) conforme ASTM A106 Grado B con N°.

We certify that result of chemical analysis and mechanical test are true and correct copy of the test certificate issued by the manufacturer and/or supplier Raw material (Seamless Pipe) certis conform to ASTM A106 Grade B N°.

10060055 10038007 11021864 10041519 10040909 10060053 10051546

Este material cumple con los requerimientos especificados en la orden.
The material of this certificate heat number mentioned above is in compliance with the requirements specified in the order.

Nota: Formado en caliente a 520°C-980°C, enfriado al aire. Formado en frío normalizado a 940°C max. Tiempo de permanencia 10'. Inspección Dimensional: Satisfactoria. F: FORMADO EN CALIENTE/HOT FORMED	Nota: Hot formed fittings in a range from 520°C to 980°C, cooled in still air. Cold formed normalized at 940°C max. Holding time 10'. Visual dimensional check: Satisfactory. CF: FORMADO EN FRIO/COLD FORMED	The Products described herein were produced in accordance with the above referenced specification and are identified with the "R" which is permanently marked on each fitting. The values of hardness for fittings NPS 2 1/2" and smaller ones obtain from the conversion of hardness Rockwell B to hardness Brinell HBW by means of table WILSON DESK CHART 60. Los valores de dureza para conexiones de NPS de 2 1/2" y menores, se obtienen de la conversión de dureza Rockwell B a dureza Brinell HBW mediante la tabla WILSON DESK CHART 60. Quality Manager/Jefe de Calidad: ING. WALDO GALLEGOS GALVAN
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